

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
14 June 2001 (14.06.2001)

PCT

(10) International Publication Number
WO 01/41832 A3(51) International Patent Classification⁷: A61M 37/00,
1/14, 1/34, 1/36, B01D 35/00, C02F 9/00, 1/00Circle, Longmont, CO 80504 (US). WHITE, Steven, A.;
91 Brigham Street, Hudson, MA 01749 (US).

(21) International Application Number: PCT/US00/42385

(74) Agents: RYAN, Daniel, D. et al.; P.O. Box 26618, Mil-
waukee, WI 53226 (US).(22) International Filing Date:
29 November 2000 (29.11.2000)(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ,
DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM,
TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/451,238 29 November 1999 (29.11.1999) US(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF,
CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).(71) Applicant: NXSTAGE MEDICAL, INC. [US/US]; 3
Highwood Drive, Tewksburg, MA 01876 (US).(72) Inventors: BURBANK, Jeffrey, H.; 18 Sunrise Road,
Boxford, MA 01921 (US). BRUGGER, James, M.; 4 Sa-
vory Street, Newburyport, MA 01950 (US). TREU, Den-
nis, M.; 8 Twin Brook Lane, Bedford, NH 03110 (US).
FINCH, C., David, Jr.; 106 Carter Cove, Clinton, MS
39056 (US). FULKERSON, Barry, N.; 833 Incurigible

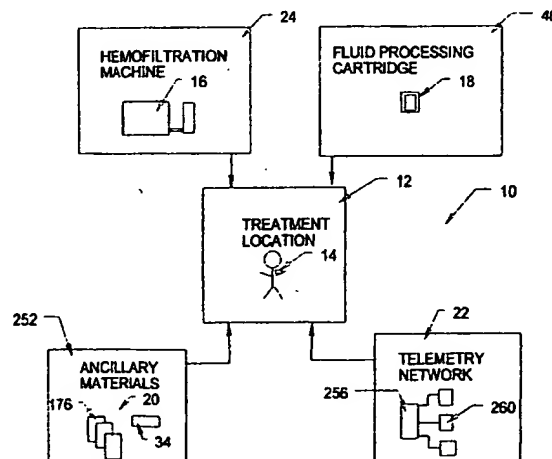
Published:

— with international search report

(88) Date of publication of the international search report:
31 January 2002

[Continued on next page]

(54) Title: SYSTEMS AND METHODS FOR PERFORMING FREQUENT HEMOFILTRATION



(57) Abstract: Systems and methods support frequent hemofiltration at a designated treatment location (14) to provide a durable hemofiltration machine (16) at the site, and provide a disposable extracorporeal fluid circuit (18) for installation on the machine. The systems and methods provide a replacement fluid for connection to the extracorporeal fluid circuit. The systems and methods instruct use of the hemofiltration machine, extracorporeal fluid circuit, and replacement fluid at the site. Hemofiltration is carried out by (i) operating the hemofiltration machine to convey an individual's blood through the extracorporeal fluid circuit to a hemofilter at a blood flow rate of at least 300 ml/min to remove waste fluid, (ii) operating the hemofiltration machine to return treated blood, after removal of waste fluid, to the individual, and (iii) operating the hemofiltration machine to supply replacement fluid through the circuit to the individual, and (iv) performing (i), (ii), and (iii) at least four times weekly.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/42385

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61M 37/00, 1/14, 1/34, 1/36; B01D 35/00; C02F 9/00, 1/00

US CL : 604/4.01, 5.01, 6.09; 210/252, 256, 258, 650, 739, 929; 422/44

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : Please See Continuation Sheet

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4,494,950 A (FISCHELL) 22 January 1985, entire document.	2, 3, 16, 17
A	US 4,650,458 A (DAHLBERG et al.) 17 March 1987, entire document.	1-22
X U ---Y	US 5,762,805 A (TRUITT et al.) 09 June 1998, entire document.	1, 4, 7, 8, 11-13, 15, 18 U ----- -----5, 6, 9, 10, 14, 19-22
Y	US 5,863,421 A (PETER, Jr. et al.) 26 January 1999, entire document.	1-22
Y	US 5,871,465 A (VASKO) 16 February 1999, entire document.	1-22

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:	"T" later documents published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" documents defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" documents which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

07 June 2001 (07.06.2001)

Date of mailing of the international search report

02 AUG 2001

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703)305-3230

Authorized officer

Patricia M. Bianco

Telephone No. (703) 305-1482

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/42385

Continuation of B. FIELDS SEARCHED Item 1: 604/4.01, 5.01, 6.09, 5.02-5.04, 6.1, 6.11, 6.15, 6.16; 210/252, 256, 258, 650, 739, 929, 645-57, 651, 741, 767, 781-82, 793-94, 800-01, 805, 85, 87-90, 97-98, 103, 138-40, 253-257.2, 258-61, 269, 275, 282, 287-89, 302, 321.6, 321.71-.72, 322, 323.1, 348-49, 416.1, 418, 420, 424, 427, 428; 422/44, 48, 68.1, 82.13

Continuation of B. FIELDS SEARCHED Item 3: EAST filtration, blood, telemetry, network, remote system, modem, remote control, automated, authorization, replacement fluid

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☒ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.

N N N J